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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,610	08/07/2001	Georg Rose	DE000116	1411

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EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/923,610	ROSE, GEORG	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 5 and 7 to 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 to 5 and 7 to 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 to 5 and 7 to 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sukkar ('778)* in view of *Chao Chang et al.*

Concerning independent claims 1 and 7, *Sukkar ('778)* discloses a method and dialogue system for recognizing speech utterances, comprising:

"storing entries including company names [and variants of the company names] in a database [, the variants including at least one of mix-ups of part of company names, colloquial formulations of company names, abbreviations of company names, and acronyms of company names]" – a word lexicon database 318 stores data structures of words to be recognized (column 9, line 59 to column 10, line 19: Figure 3); a speech recognition application recognizes company names (column 13, lines 36 to 43); thus, word lexicon database 318 stores company names;

"generating at least one word sequence hypothesis by a speech recognizer from a speech utterance consisting of one or more words" – a recognition component 312 recognizes individual subwords in the input speech; the recognition component 312

emits the selected most-likely word, phrase, or sentence on path 324 as a word/phrase/sentence hypothesis (column 9, lines 59 to 60; column 10, lines 10 to 12: Figure 3);

"comparing the word sequence hypothesis with the entries which represent company names in a database" – the recognition component 312 also has an associated word lexicon database 318 and a grammar database 320; the word lexicon database 318 represents a mapping between strings of subword sounds and vocabulary words, phrases, or sentences; the word lexicon database 318 contains a data structure describing the pronunciation, in terms of subword symbols, of each word in the system's vocabulary; in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, word lexicon database 318 contains a list of company names for a company name recognition task;

"selecting a company name as a recognition result in dependence on the result of the comparison" – in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the

speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, recognition component 312 selects a most-likely company name for a company name recognition task.

Concerning independent claims 1 and 7, *Sukkar ('778)* discloses a word lexicon database 318 for storing data structures of words to be recognized (column 9, line 59 to column 10, line 19: Figure 3), and a speech recognition application for recognizing company names (column 13, lines 36 to 43), implying that word lexicon database 318 stores company names. *Sukkar ('778)* omits only storing entries including "variants of the company names in a database, the variants including at least one of mix-ups of part of company names, colloquial formulations of company names, abbreviations of company names, and acronyms of company names". However, *Chao Chang et al.* teaches speech recognition of various subsets of words, where the various subsets of words are sent to a natural language interpreter. Specifically, subsets of words include variants on a company name "IBM", where variants include "international business machines incorporated" and "international business machines". (Column 6, Line 60 to Column 7, Line 22) Variants for IBM of "international business machines incorporated" and "international business machines" include at least "mix-ups of part of company names". The objective is to process and interpret natural language in a manner that enhances operation through the use of semantic confidence values to enhance efficiency. (Column 1, Lines 20 to 27) It would have been obvious to one having ordinary skill in the art to not take into account certain words in a company name as

taught by *Chao Chang et al.* in the speech recognition method and system of *Sukkar ('778)* for the purpose of enhancing operation through the use of semantic confidence values to increase efficiency.

Concerning independent claim 8, *Sukkar ('778)* discloses a method and dialogue system for recognizing speech utterances, comprising:

"storing entries including company names [and variants of company names] in a database" – a word lexicon database 318 stores data structures of words to be recognized (column 9, line 59 to column 10, line 19: Figure 3); a speech recognition application recognizes company names (column 13, lines 36 to 43); thus, word lexicon database 318 stores company names;

"generating at least one word sequence hypothesis by a speech recognizer from a speech utterance consisting of one or more words" – a recognition component 312 recognizes individual subwords in the input speech; the recognition component 312 emits the selected most-likely word, phrase, or sentence on path 324 as a word/phrase/sentence hypothesis (column 9, lines 59 to 60; column 10, lines 10 to 12: Figure 3);

"finding entries in the database that are at least partially found in the word sequence hypothesis by comparing the word sequence hypothesis with the entries which represent company names stored in the database" – the recognition component 312 also has an associated word lexicon database 318 and a grammar database 320; the word lexicon database 318 represents a mapping between strings of subword

sounds and vocabulary words, phrases, or sentences; the word lexicon database 318 contains a data structure describing the pronunciation, in terms of subword symbols, of each word in the system's vocabulary; in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, word lexicon database 318 contains a list of company names for a company name recognition task;

"selecting a company name as a recognition result in dependence on the result of the comparison and probability of each entry" – in conjunction with recognizing a string of subword sounds from sampled speech, the recognition component 312 consults the word lexicon database 318 to determine a word, phrase, or sentence in its vocabulary that most likely corresponds to the input speech (column 9, line 60 to column 10, line 9: Figure 3); the speech recognizer 100 was evaluated on a company name recognition task, the goal of which is to recognize the name of a company out of 6963 possible names (column 13, lines 35 to 41); thus, recognition component 312 selects a most-likely company name for a company name recognition task.

Concerning independent claim 8, *Sukkar ('778)* discloses most-likely words are recognized (column 10, lines 10 to 12), implying a company name is selected based upon "a first probability", but omits storing variants of company names, and producing a

first probability dependent upon a number of words in a word sequence, where each word has a weight factor. However, *Chao Chang et al.* teaches speech recognition of various subsets of words, where the various subsets of words are sent to a natural language interpreter. Specifically, subsets of words include variants on a company name "IBM", where variants include "international business machines incorporated" and "international business machines". (Column 6, Line 60 to Column 7, Line 22) Moreover, *Chao Chang et al.* teaches:

"producing a first probability for each entry found during the step of comparing, the probability being dependent on the number of words in each of the entries found in the word sequence hypothesis, wherein each word has a weight factor, particularly characteristic words having a large weight factor, the weight factor being taken into account in determining the probability for each entry" – word confidence scores ("a first probability for each entry") are combined for all words a slot to form a slot confidence score; word confidence scores can be combined by forming a mathematical average of their respective values; certain words can be ascribed more importance ("a weight factor") so that weighted averaging can be used; for "International Business Machines, all four words contribute to filling the company name slot, but only the first three are necessary words (column 6, lines 39 to column 7, line 22: Figure 1); the first three words are "particularly characteristic words having a large weight factor"; the probability is "dependent on the number of words" because a mathematical weighted average of all the words is determined. The objective is to process and interpret natural language in a manner that enhances operation through the use of semantic confidence values to

enhance efficiency. (Column 1, Lines 20 to 27) It would have been obvious to one having ordinary skill in the art to not take into account certain words in a company name as taught by *Chao Chang et al.* in the speech recognition method and system of *Sukkar ('778)* for the purpose of enhancing operation through the use of semantic confidence values to increase efficiency.

Concerning claim 2, *Sukkar ('778)* discloses subword-level verification subcomponent 410 receives the input speech on path 322 and generates for each subword a subword verification score representing a determination of whether the speech segment associated with the subword contains the subword hypothesis emitted by the recognition component 324; the subword verification scores 426a-426z are determined as a ratio of the likelihood that the speech segment contains the sound associated with the subword hypothesis; combiner subcomponent 414 combines the subword verification scores to produce a word/phrase/sentence verification score ("a probability value") on path 428 for the speech unit (column 10, line 58 to column 11, line 12: Figure 4).

Concerning claim 3, *Sukkar ('778)* discloses a discriminative training procedure for subword-based verification training of subword models based upon correct and incorrect recognitions (column 12, lines 6 to 65: Figures 6a and 6b); training subword models based upon correct and incorrect recognitions is equivalent to "an adaptation of a speech model".

Concerning claim 4, *Sukkar ('778)* discloses assigning a likelihood to each subword hypothesis and combining subword scores (column 10, line 58 to column 11, line 12), but omits not taking into account certain words defined a priori during comparison to entries in a database of company names. However, *Chao Chang et al.* teaches natural language speech recognition, where certain words are ascribed more importance for a weighting average so as to distinguish between smaller subsets of crucial words identified as necessary words and words that merely fill a slot. In the example of a company name "International Business Machines Incorporated" only the first three words are necessary words. (Column 6, Line 50 to Column 7, Line 14) Thus, "Incorporated" is not a necessary word for "International Business Machines Incorporated", so it is "a priori not taken into account during comparison."

Concerning claim 5, *Sukkar ('778)* discloses a discriminative training procedure for subword-based verification training of subword models based upon correct and incorrect recognitions ("a speech model which was trained") (column 12, lines 6 to 65: Figures 6a and 6b); training is "with the aid of the information stored in the database" because "the database" can be defined to collectively include recognition-specific subword acoustic Hidden Markov Models (HMMs) 316, word lexicon database 318, and grammar database 320, and training at least utilizes recognition-specific subword acoustic Hidden Markov Models (HMMs) 316 (Figures 3 and 4).

Concerning claim 9, *Chao Chang et al.* teaches a mathematical weighted average of words in each slot ("a first probability value") (column 6, lines 39 to 59: Figure 1) and a word confidence score for each phone of each word in the slot with

phone confidence scores to form the slot confidence value ("a second probability value being taken into account") (column 7, lines 15 to 22: Figure 1).

Response to Arguments

3. Applicant's arguments filed 03 October 2005 have been fully considered but they are not persuasive.

Applicant's argument is that *Chao Chang et al.* is not concerned with storing or comparing variants of company names. Because *Chao Chang et al.* arrives at a result without storage or comparison of any variants of company names, and because *Sukkar ('778)* does not teach or suggest variants of company names, Applicant concludes that independent claims 1, 7, and 8 are not obvious over *Sukkar ('778)* in view of *Chao Chang et al.* This position is traversed.

It is *Sukkar ('778)*, and not *Chao Chang et al.*, that is being cited for the steps of storing and comparing words sequences of company names from a database. *Chao Chang et al.* is cited only for the suggested teaching that company names can include variants of company names, including at least mix-ups of part of company names, where a part of company name involves less than all words of a full company name. Specifically, *Sukkar ('778)* discloses a recognition component has an associated word lexicon database 318. (Column 9, Lines 59 to 67) Necessarily, words in a word lexicon database are stored words. Moreover, *Sukkar ('778)* discloses a name recognition task for recognizing a company name. (Column 13, Lines 35 to 41) It must follow that words stored in a word lexicon database for a company name recognition task are stored

company names. Furthermore, *Sukkar ('778)* discloses that a recognition component 312 consults the word lexicon database 318 to determine a word, phrase or sentence that most likely corresponds to the input speech. (Column 10, Lines 1 to 6) Consulting a word lexicon database for a recognition task to recognize a company name corresponding to input speech is equivalent to comparing a word sequence of a company name from a database to input speech. Thus, *Sukkar ('778)* discloses the steps of storing and comparing words sequences of company names from a database.

Chao Chang et al. is cited only for the teaching that a recognition task for recognizing company names may involve less than all the words in a company name. A full company name of "International Business Machines, Incorporated" may be recognized by less than all the words of the company name, *e.g.* "International Business Machines", omitting "Incorporated". *Chao Chang et al.* does not teach away from Applicant's claim limitation because the variants of company names are not stored in a database by that reference. *Sukkar ('778)* discloses storing company names in a database. Applicant is attacking the references individually without considering what the combination of *Sukkar ('778)* and *Chao Chang et al.* would suggest to one having ordinary skill in the art. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

An obviousness rejection should be evaluated by what the combination of references as a whole suggests to one having ordinary skill in the art. See MPEP

2141.02. Here, it should also be noted that *Sukkar ('778)* even teaches that the word lexicon database 318 may include plural pronunciations for some words. (Column 9, Line 67 to Column 10, Line 1) For a company name recognition task, *Sukkar ('778)* thus teaches that there may be a plurality of formulations for the same company name that are taken into account for company name recognition. *Chao Chang et al.* then simply suggests that variant formulations of a company name may involve only part of a complete company name. The objective, as expressly set forth by *Chao Chang et al.*, is to interpret natural language in a manner that enhances efficiency. (Column 1, Lines 20 to 27) One skilled in the art of natural language speech recognition would understand that natural language by its very nature produces various spoken formulations of equivalent linguistic expressions, and that *Chao Chang et al.* is directed to improving the efficiency of natural language speech recognition by taking into account words that are unnecessary for formulations of company names. Thus, the combination of *Sukkar ('778)* and *Chao Chang et al.* provides a motivation for all of the claimed limitations.

Therefore, the rejection of claims 1 to 5 and 7 to 9 under 35 U.S.C. 103(a) as being unpatentable over *Sukkar ('778)* in view of *Chao Chang et al.* is proper.

Conclusion

4. This is a Request for Continued Examination of Applicant's earlier Application No. 09/923,610. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS**

ACTION IS MADE FINAL even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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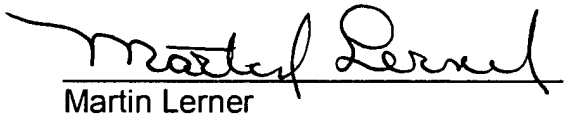

Martin Lerner
Examiner
Group Art Unit 2654

Replacement Sheet
Reply to Final Office Action of 8/25/05

S/N 09/923,610

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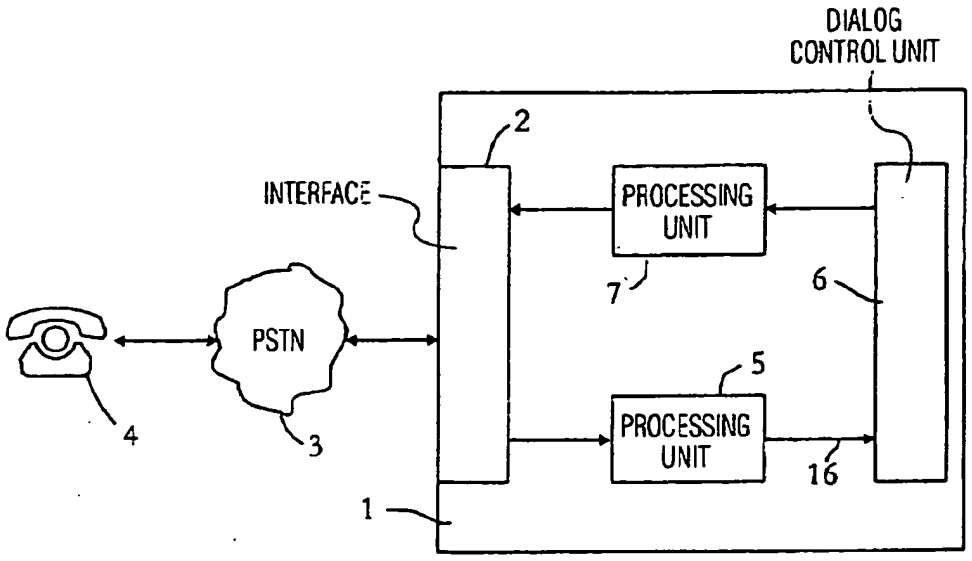

FIG. 1

ENTRY APPROVED
01/12/06
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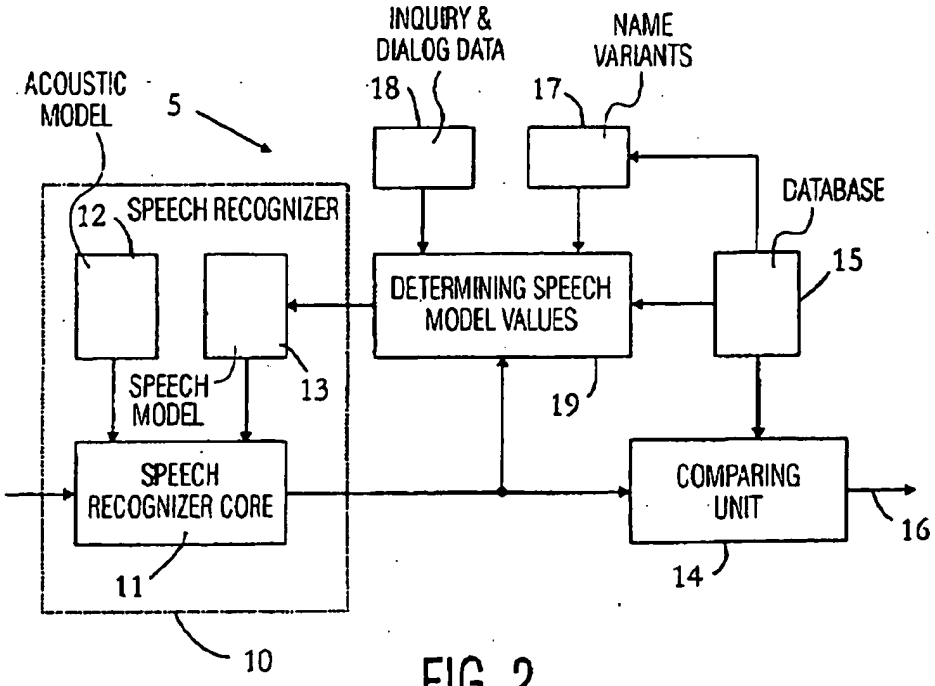

FIG. 2